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SOME RESULTS FROM THE STUDY OF ALLIUM.

DURING the summer of 1897, at the University of Chicago, I began a morphological investigation of certain species of *Allium*, being attracted chiefly by the often quoted polyembryony of *A. tricoccum* Ait. My results in the case of this species indicate that if polyembryony occurs at all, it is very rare. Besides *A. tricoccum*, I examined more or less thoroughly *A. cernuum* Roth, and *A. Canadense* Kalm, with the same general result. Seventy-five embryo-sacs of *A. tricoccum* were examined at the stage in which both egg apparatus and antipodal cells ought to have been found. The egg apparatus was found in seventy of them, and the appearance of the sacs in which it was not found would indicate that it had been lost by accident, as all other structures were normal. Of the seventy-five sacs, only sixteen contained antipodal cells, and these antipodal cells were usually small, and it was seldom that more than one or two could be found. In one sac there were three antipodal cells in a row, but in other cases where three were found they were crowded together irregularly. Wherever antipodal cells were found, they had a shriveled, dead appearance, and stained with difficulty or not at all. Twenty-six embryos were examined, all of which had developed from the egg cell. No trace of antipodal cells could be found in any sac in which the embryo had begun to develop.

The results from *A. cernuum* were nearly the same as for *A. tricoicum*. Ninety-five embryo sacs were examined in the eight-celled stage. The egg apparatus was found in all of them, while antipodal cells were found in only twenty-nine; and, as in *A. tricoicum*, these were invariably small, and apparently about to disappear. It was seldom that more than one or two could be found. Of the ninety-five specimens, thirty were collected on or after August 16, and no trace of antipodal cells could be found in any of these. Fifteen embryos were examined, all of which were normal in position and number. No antipodal cells were present in any sacs in which the embryo had begun to develop.

My collection of *A. Canadense* was made from a patch covering about half an acre, at West Pullman, Illinois. In nearly every specimen the nucellus had died long before the stage when fertilization might have taken place; and later in the season it was found that only six embryos had developed from the whole patch in which there had been thousands of blossoms. All of these embryos, however, were in the normal position.

Since in *A. tricoicum* only about 21 per cent., and in *A. cernuum* about 30 per cent. of the sacs examined contained antipodal cells, and these cells in all cases were small and not found at all except in the earlier stages, the development of embryos by antipodal cells in these species seems very doubtful.—CLARENCE J. ELMORE, *Crete, Nebraska*.